UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 May 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 3, 5, 7, 9 to 10, 16 to 19, 21 to 28, and 30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 to 3, 5, 7, and 9 to 10* is/are allowed.

6)☒ Claim(s) *16 to 19, 21 to 28 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC §103

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16 to 19, 21 to 28, and 30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over *Ström et al.* in view of *Roberts et al.*

Concerning independent claims 16 and 25, *Ström et al.* discloses a speech

recognition method and machine-readable code, comprising:

"converting an audio input signal to an output signal by the speech recognizer,

the speech recognizer having speech models and a grammar file, the grammar file

including at least one command syntax" – automatic speech recognition (ASR) systems

translate audio information ("an audio input signal") into text information ("an output

signal"); an ASR system interprets the utterances based on a set of active grammars ("a

grammar file"); an ASR system computes scores for options of the active grammars

based on two kinds of information: acoustic information and grammatical information, to

produce an acoustic score and a grammar weight (column 1, lines 10 to 50); active

grammars ('the grammar file") have command syntax as grammar options (e.g. "tell me

sports" or "tell me taxi" are commands) (column 15, line 56 to column 17, line 13: Tables

3 to 6); implicitly, speech models provide acoustic information for producing acoustic

scores;

"estimating a correctness measure based at least in part on the grammar file,

wherein the correctness measure expresses if the output signal is a correct

representation of the audio input signal" – a score ("a correctness measure") computed

by an ASR system for an option, given an utterance, is a combination of the acoustic

score and the grammar weight ("based at least in part on the grammar file") (column 1,

lines 36 to 56); a score measures how well a given input utterance matches a

recognition option, and, thus, is a measure of "if the output signal is a correct

representation of the audio input signal";

"generating feedback data, the feedback data including at least one of the audio

input signal, the output signal, and the correctness measure" – corrective error training

is used to tune grammar weights of options; an ASR system generates an N-best list of

possible translations of the utterance, wherein each option in the active grammars is

ranked according to a score; the resulting scores are used to adjust the grammar

weights through comparison with a transcribed human interpretation of the utterance,

called the transcribed result (column 5, line 37 to column 6, line 24); an instruction to

change a weight of a grammar option is "feedback data" based on "the correctness

measure" from corrective error training;

"using the feedback data to tune the speech recognizer by modifying [the speech

models and] the grammar file" – corrective error training is used to tune grammar

weights ("modifying . . . the grammar file") of options when a sufficiently large number of

utterances is available (column 3, lines 11 to 25); weights of the transcribed result and

the best competitor are altered for each utterance (column 6, lines 25 to 34).

Concerning independent claims 16 and 25, the only elements omitted by *Ström*

et al. are additionally using the feedback data for "modifying the speech models" and,

arguably, "estimating the correctness measure includes analyzing dialog progression".

Ström et al. implies there are speech models because acoustic information is produced

for scoring an utterance, as acoustic information for scoring an utterance is produced by

comparing an utterance to speech models. Moreover, *Ström et al.* can be construed to

implicitly include a dialog for tasks involving searching for a movie (column 1, lines 20 to

35), finding a city/state pair (column 3, line 64 to column 4, line 13), or finding

information about taxis and sports (column 15, line 52 to column 16, line 19). However,

although *Ström et al.* discloses modifying a grammar by changing weights of grammar

options, *Ström et al.* omits similarly modifying a speech model. Still, it is fairly well

known to provide training for speech recognition by changing weights of an acoustic

model in response to user correction of recognition results.

Concerning independent claims 16 and 25, *Roberts et al.* teaches a dictation

program, where a pick-choice command causes a token to be used for training of an

acoustic word model ("the speech models"). Also, training of acoustic models is in

response to a dialog with a user during an EDITMODE by speaking letter commands of

a STARTSTRING. (Column 29, Line 55 to Column 30, Line 53: Figure 25: Steps 260,

262a, 264) Whether or not a recognized word is correct involves analyzing a dialog

progression of whether a user corrects a word during EDITMODE for *Roberts et al.* It is

stated that training an acoustic word model is helpful in speech recognition because it reduces the chance that an incorrectly recognized utterance will be used to train models. (Column 15, Line 26 to Column 16, Line 37) It would have been obvious to one having ordinary skill in the art to provide for training of acoustic models and estimating a correctness measure by analyzing a dialog progression as taught by *Roberts et al.* in a speech recognition method with corrective training of grammar weights in *Ström et al.* for the purpose of reducing a chance of that an incorrectly recognized utterance will be used to train models.

Concerning claims 17 and 27, *Ström et al.* discloses tuning grammar weights by storing a new grammar weight for an associated grammar option, implicitly; a new grammar weight ("the feedback data") is stored for an associated grammar option; tuning a grammar weight corresponds to at least "modifying the grammar file based on the feedback data".

Concerning claims 18 and 28, *Ström et al.* discloses options to be tuned are said to be in the foreground, while options not to be tuned are said to be in the background (column 5, lines 47 to 52); thus, as only foreground options are tuned, it follows that only modified grammar weights ("feedback data") that correspond to "which the correction measure indicates the output signal is not correct" or "only those audio signals for which the correction status indicates that a correction to the output signal was necessary" are stored.

Concerning claim 19, *Ström et al.* discloses options to be tuned are said to be in the foreground, while options not to be tuned are said to be in the background (column 5, lines 47 to 52); whether an option is in a foreground or a background provides for filtering of tuned grammar weighting "according to a criterion."

Concerning claims 21 and 26, *Ström et al.* discloses grammar weighting and error corrective training is applied to a speech recognition system (column 1, lines 6 to 10).

Concerning claim 22, *Ström et al.* discloses that corrective error training may be automated, and anyone capable of using a user interface through a web or command line front end can estimate grammar weights (column 5, lines 20 to 36); thus, at least a correctness measure, or re-estimated grammar weight, can be entered as "received information through an application programming interface".

Concerning claims 23 and 24, *Ström et al.* discloses "identifiers" are associated with utterances for city names, e.g. City A to City N (column 7, lines 5 to 25; column 9, lines 4 to 20: Tables 1 and 2); similarly, for each grammar specification, "relevant contextual information" relates to whether a grammar option is for sports, taxi, or movies (column 15, line 57 to 67: Table 3).

Concerning claim 30, *Ström et al.* discloses analyzing an output signal by an n-best list, where scores of transcribed text are compared to next highest scores; here, "the output signal" corresponds to text produced by speech recognition to generate an n-best list of possible translations of the utterance by an ASR system; a "correctness measure" is obtained by the "output signal" by comparing ("analyzing") a score of a

transcribed result of the utterance to a highest scoring option that is not the transcribed

result (the best competitor) (column 5, line 53 to column 6, line 24).

Allowable Subject Matter

Claims 1 to 3, 5, 7, and 9 to 10 are allowed.

Response to Arguments

Applicant's arguments filed 25 May 2006 have been fully considered but they are

not persuasive.

Firstly, Applicants argue that *Ström et al.* does not disclose a correctness

measure as a score does not actually tell whether the output from the recognition

system is correct or not. Applicants maintain that the score of *Ström et al.* measures

the probability of how well an output matches the input utterance, based on acoustic

and grammatical information, but does not tell whether the output is actually correct or

not. This position is not persuasive for a number of reasons.

Applicants' "correctness measure" should be interpreted under principles of

broadest reasonable interpretation. During patent examination, the pending claims

must be "given their broadest reasonable interpretation consistent with the

specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir.

2000). Applicants always have the opportunity to amend the claims during prosecution,

and broad interpretation by the examiner reduces the possibility that the claim, once

issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393,

1404-05, 162 USPQ 541, 550-51 (CCPA 1969) See MPEP 2111. Here, Applicants

wish to have their term of a "correctness measure" interpreted in a narrow way, as only

telling whether an output from a speech recognition is correct or not, and to discount

any interpretation where a "correctness measure" indicates a probability of how well an

output matches an input utterance. However, a broad interpretation of a "correctness

measure" would include a score, or probability, of how confidently an utterance is

recognized because a high score, or probability, would tend to indicate that a

recognition is correct, while a low score, or probability, would tend to indicate that a

recognition is incorrect. Thus, one having ordinary skill in the art could conclude that a

broad interpretation of a "correctness measure" includes a score, or probability,

indicating how well an utterance was recognized.

Moreover, Applicants are unwarrantedly attempting to read limitations into their

claims from their Specification. Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See *In re

Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicants'

Specification, Page 8, Lines 4 to 26, discloses that whether a correction is required is

determined by whether a user issues a correction command. Thus, whether a

recognition is correct or not is determined by a user saying, "No, call Julie Thomson" to

indicate that the system's recognition of "Judy Flynn" is incorrect. However, Applicants'

claims are not expressly limited so as to require that a "correctness measure" is

determined by a user issuing a correction command during a dialog with the system.

Thus, Applicants are unwarrantedly attempting to read limitations into the claims from their Specification.

Secondly, Applicants argue that a combination of *Ström et al.* and *Roberts et al.* does not disclose or suggest estimating a correctness measure by analyzing a dialog progression. This position is traversed.

Roberts et al. suggests estimating a correctness measure by analyzing a dialog progression in a manner equivalent to that disclosed by Applicants' Specification. Applicants disclose that whether a recognition is correct or not is determined by a user saying, "No, call Julie Thomson" to indicate that the system's recognition of "Judy Flynn" is incorrect. (Specification, Page 8, Lines 4 to 26) A measure of correctness is obtained during a command dialog where a user says, "no, call Julie Thomson". (Specification, Page 11, Lines 11 to 22) *Roberts et al.* equivalently discloses a command dialog to determine whether a recognition result it correct or not by edit and correction commands. In EDITMODE, a user can speak all the characters of a phrase with letter commands, and then speaking "enter_that", or can issue an edit-choice command to select a multiword phrase displayed in a phrase active window. (Column 29, Line 55 to Column 30, Line 53: Figure 25: Steps 109, 110, 260, 262a, 264, 275, 278a, 302) Thus, *Roberts et al.* equivalently discloses a "correctness measure" is determined by a user indicating that a recognition result returned by the system is incorrect through edit and correction commands. Edit and correction commands are a "dialog" between a user and the system because a user enters letters and commands or

a user selects a choice from a list displayed by the system. The system then analyzes what the user has entered to correct an acoustic model.

Therefore, the rejection of claims 16 to 19, 21 to 28, and 30 under 35 U.S.C. §103(a) as being unpatentable over *Ström et al.* in view of *Roberts et al.* is proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.
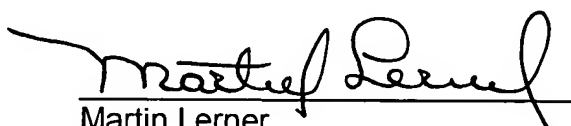
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
6/27/06

Martin Lerner
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